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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,422	05/15/2001	Markus Zumkeller	450117-03188	8953

20999 7590 01/12/2006

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EXAMINER	
LE, LANA N	
ART UNIT	**PAPER NUMBER**
2685	

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/855,422	ZUMKELLER ET AL.	
	Examiner	Art Unit	
	Lana N. Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 16-21, 26-28, and 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bach et al (US 6,088,569) in view of Furukawa et al (US 6,363,126).

Regarding claim 16, Bach et al disclose a receiver comprising:

at least one IF filter with a fixed IF bandwidth (602; fig. 6; col 4, lines 37-39),

at least one down-conversion stage (306, 316; fig. 3; col 3, lines 23-36; col 4, lines 34-37) to shift the signal input thereto into an IF range,

wherein the at least one down-conversion stage has an oscillation frequency (appropriate LO1 frequency set by controller 311) which is adjustable to detune a wanted center frequency of a wanted signal part (202; fig. 6) from a center frequency of the at least one IF filter (320; fig. 6) so that an unwanted signal part (606) adjacent to the wanted signal part lies outside the fixed IF bandwidth (602) (col 2, line 64 – col 3, line 36; col 4, lines 34-43; figs. 5-6).

Bach et al do not disclose an AM receiver configured and adapted for adjusting a variable oscillation frequency on the basis of a feedback signal supplied downstream from the down-conversion stage. Furukawa et al disclose an AM receiver (fig. 1)

configured and adapted for adjusting a variable oscillation frequency on the basis of a feedback signal supplied downstream from the down-conversion stage in order to detune (col 4, lines 28-40; col 15, line 59 – col 16, line 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the receiver of Bach et al receive an AM signal and adjusting the variable oscillation frequency based on feedback downstream from the down-conversion stage in order to have the receiver to be capable receive any type of modulated incoming signal to have improved usage of being able to add information to an electronic signal and varies the signal by its height to impose information on it and to improve the error rate characteristic so that the feedback loop always converge stably as suggested by Furukawa et al (col 2, lines 44-56).

Regarding claim 17, Bach et al and Furukawa et al disclose the receiver according to claim 1, wherein Bach et al further disclose the unwanted signal part is detected by analyzing the power of FFT carriers outside the wanted signal part, or BER fine tuning in a digital baseband processing or during optimization of an automatic gain control voltage (RSSI indication and filtering during AGC of baseband signal; col 4, lines 44-58).

Regarding claim 18, Bach et al and Furukawa et al disclose the AM receiver according to claim 1, wherein Bach et al further disclose the receiver further comprising a baseband processing stage (322) which readjusts the detuned IF signal to a predetermined center frequency (col 4, lines 44-58).

Regarding claim 19, Bach et al and Furukawa et al disclose the AM receiver according to claim 2, wherein Bach et al further disclose the baseband processing is performed digitally (col 4, lines 44-58).

Regarding claim 20, Bach et al and Furukawa et al disclose the AM receiver according to claim 18, Bach et al further disclose comprising a PLL circuit for adjusting the variable oscillation frequency, wherein the baseband processing stage supplies the feedback signal to the PLL circuit (col 2, lines 23-26).

Regarding claim 21, Bach et al and Furukawa et al disclose the AM receiver according to claim 16, Bach et al further disclose comprising the step of readjusting via 322 the detuned IF signal to a predetermined center frequency in the baseband frequency after the at least one IF filtering via 320 (col 4, lines 44-58).

Regarding claim 26, Bach et al disclose a method to process a received and optionally processed signal (col 3, lines 17-21) comprising the steps of:

detuning a wanted center frequency of a wanted signal part from a center frequency used during at least one IF filtering (via 320; fig. 6) with a fixed IF bandwidth (602; fig. 6; col 4, lines 37-39) so that an unwanted signal part adjacent to the wanted signal part lies outside the fixed IF bandwidth 602 (col 2, line 64 – col 3, line 36; col 4, lines 34-43; figs. 5-6). Bach et al do not disclose processing an AM signal, detuning by means of a down conversion stage, and adjusting, on the basis of a feedback signal obtained downstream from the down-conversion stage, a frequency to which the wanted center frequency is detuned.

Furukawa et al disclose a received AM signal (analog signal before ADC 5; fig. 1), detuning by means of a down conversion stage (1, 2) and adjusting, on the basis of a feedback signal obtained downstream from the down-conversion stage, a frequency to which the wanted center frequency is detuned (col 4, lines 28-40; col 15, line 59 – col 16, line 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the receiver of Bach et al receive an AM signal and adjusting the frequency to which the wanted center frequency is detuned on the basis of a feedback signal downstream from the down-conversion stage in order to have the receiver to be capable receive any type of modulated incoming signal to have improved usage of being able to add information to an electronic signal and varies the signal by its height to impose information on it and to reduce deterioration of the error rate characteristic so that the feedback loop always converge stably as suggested by Furukawa et al (col 2, lines 44-56).

Regarding claim 27, Bach et al and Furukawa et al disclose the method according to claim 26, wherein Bach et al disclose the method comprising the step of detecting the wanted signal part by:

analyzing the power of FFT carriers outside the wanted signal part; or

bit error rate fine tuning in a digital baseband processing; or optimizing an automatic gain control voltage (RSSI indication and filtering during AGC of baseband signal; col 4, lines 44-58).

Regarding claim 28, Bach et al and Furukawa et al disclose the method according to claim 26, wherein Bach et al disclose further comprising the step of

readjusting by converting via 322 the detuned IF signal to a predetermined center frequency in the baseband frequency after the at least one IF filtering via 320 (col 4, lines 44-58).

Regarding claim 31, Bach et al disclose a receiver comprising:

an IF filter having a fixed IF bandwidth (602) and a predetermined center frequency (fig. 6; col 4, lines 37-39),

a down-conversion stage (306, 316; fig. 3; col 3, lines 23-36; col 4, lines 34-37) arranged upstream from the IF filter (320), configured and adapted to receive an input signal (Rfin) having a desired signal component having a center frequency (col 3, lines 6-11, lines 59-61); and wherein the receiver is configured and adapted for shifting, by means of the down-conversion stage, the input signal (Rfin) into an IF range on the basis of a control signal such that the center frequency of the shifted input signal is detuned from a center frequency of the at least one IF filter (320) (col 2, line 64 – col 3, line 36; col 4, lines 34-43; figs. 5-6). Bach et al do not disclose an AM receiver comprising a feedback path for supplying a control signal to the down-conversion stage on the basis of a feedback signal obtained downstream from the down-conversion stage. Furukawa et al disclose an AM receiver (fig. 1; analog receiver before A/D converter 5, 6) comprising a feedback path for supplying a control signal to the down-conversion stage (1, 2) on the basis of a feedback signal (10, 11, 17) obtained downstream from the down-conversion stage, wherein the AM receiver shifts by means of the downconversion stage (1, 2) the input signal into an IF range on the basis of a control signal (10, 11, 17) to detune from the IF filter (3) (col 4, lines 28-40; col 15, line

59 – col 16, line 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the receiver of Bach et al receive an AM signal and supplying a control signal to the down conversion stage on the basis of a feedback signal obtained downstream from the down-conversion stage in order to have the receiver of Bach to be capable receive any type of modulated incoming signal to have improved usage of being able to vary the signal by its height to impose information on it and to optimally control the oscillating frequency and

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the receiver of Bach et al receive an AM signal and adjusting the variable oscillation frequency based on feedback downstream from the down-conversion stage in order to have the receiver to be capable receive any type of modulated incoming signal to have improved usage of being able to add information to an electronic signal and varies the signal by its height to impose information on it and to improve the error rate characteristic so that the feedback loop always converge stably as suggested by Furukawa et al (col 2, lines 44-56).

Regarding claim 32, Bach et al and Furukawa et al disclose the AM receiver of claim 31, wherein Bach et al disclose the AM receiver is configured and adapted for setting the detuned center frequency to a first center frequency and for determining the first center frequency by:

analyzing the power of FFT carriers outside the wanted signal part; or

bit error rate fine tuning in a digital baseband processing; or optimizing an automatic gain control voltage (RSSI indication and filtering during AGC of baseband signal; col 4, lines 44-58).

Regarding claim 33, Bach et al and Furukawa et al disclose the AM receiver of claim 31, wherein Furukawa et al discloses a baseband processing stage (9, 10, 11, 17) arranged downstream from the IF filter (3), configured and adapted to shift the detuned input signal to the center frequency of the IF filter (col 4, lines 28-40; col 15, line 59 – col 16, line 4).

Regarding claim 34, Bach et al and Furukawa et al disclose the AM receiver of claim 33, where Furukawa et al disclose wherein the feedback path comprises a PLL circuit for adjusting the variable oscillation frequency, wherein the baseband processing stage supplies the feedback signal to the PLL circuit (col 2, lines 23-26).

Regarding claim 35, Bach et al disclose a receiver (col 3, lines 17-21) comprising:

an IF filter (320) having a fixed bandwidth (602; fig. 6; col 4, lines 37-39);

a down-conversion stage (306, 316; fig. 3; col 3, lines 23-36), arranged upstream from the IF filter (320), configured and adapted to receive an input signal (Rfin) having a desired signal component (202; fig. 6) and an undesired signal component (606) adjacent the desired signal component in the frequency domain (col 3, lines 6-11; lines 59-61); and

wherein the AM receiver is configured and adapted for shifting, by means of the

down-conversion stage (306, 316), the input signal into an IF range on the basis of the control signal such that the undesired signal component (606) lies at least partially outside the bandwidth (602) of the IF filter (320) (col 2, line 64 – col 3, line 36; col 4, lines 34-43; figs. 5-6).

However, Bach et al do not disclose an AM receiver comprising a feedback path for supplying a control signal to the down-conversion stage on the basis of a feedback signal obtained downstream from the down-conversion stage. Furukawa et al disclose an AM receiver (fig. 1; analog signal received before A/D conversion 5, 6) comprising a feedback path for supplying a control signal to the down-conversion stage on the basis of a feedback signal obtained downstream from the down-conversion stage (col 4, lines 28-40; col 15, line 59 – col 16, line 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the receiver of Bach et al receive an AM signal and supplying a control signal to the down conversion stage on the basis of a feedback signal obtained downstream from the down-conversion stage in order to have the receiver to be capable receive any type of modulated incoming signal to have improved usage of being able to vary the signal by its height to impose information on it and to improve the error rate characteristic so that the feedback loop always converge stably as suggested by Furukawa et al (col 2, lines 44-56).

Regarding claim 36, Bach et al and Furukawa et al disclose the AM receiver of claim 35, wherein Bach et al disclose the AM receiver is configured and adapted for detecting the undesired signal component by:

analyzing the power of FFT carriers outside the wanted signal part; or

bit error rate fine tuning in a digital baseband processing; or optimizing an automatic gain control voltage (RSSI indication and filtering during AGC of baseband signal; col 4, lines 44-58).

Regarding claim 37, Bach et al and Furukawa et al disclose the AM receiver of claim 35, wherein Bach et al disclose the IF filter (320) has a predetermined center frequency (col 4, lines 37-39), the desired signal component (202) has a center frequency IF2, and the AM receiver is configured and adapted for shifting, by means of the down-conversion stage (306, 316), the input signal into the IF range such that the center frequency of the shifted input signal (IF2) is detuned from the center frequency of the IF filter (320) (col 4, lines 16-43).

3. Claims 22 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bach et al (US 6,088,569) in view of Furukawa et al (US 6,363,126) and further in view of Roschmann et al (US 5,305,347).

Regarding claim 22, Bach et al and Furukawa et al disclose the AM receiver according to claim 16, wherein Bach et al and Furukawa et al don't specifically disclose the AM receiver is characterized in that it is a digital shortwave receiver. Roschmann et al discloses a digital shortwave communication system (col 2, lines 25-29). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a digital shortwave in order to have a small shortwave transmission band below a certain predefined frequency as one type of standard digital radio signal transmission.

Regarding claim 29, Bach et al and Furukawa et al disclose the method according to claim 26, wherein Bach et al and Furukawa et al don't specifically disclose the AM receiver is characterized in that it is a digital shortwave receiver. Roschmann et al discloses a digital shortwave communication system (col 2, lines 25-29). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a digital shortwave in order to have a small shortwave transmission band below a certain predefined frequency as one type of standard digital radio signal transmission.

4. Claims 23 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bach et al (US 6,088,569) in view of Furukawa et al (US 6,363,126) in view of Roshmann et al (US 5,305,347) and further in view of Lee (US 6,829,475).

Regarding claim 23, Bach et al, Furukawa et al and Roshmann et al disclose the AM receiver according to claim 22, wherein they don't specifically disclose the digital shortwave receiver is a digital radio Mondial receiver. Lee discloses the digital shortwave receiver is a digital radio Mondial receiver (col 2, lines 12-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the modified digital shortwave receiver of Bach et al, Furukawa et al, and Roshmann et al be a Mondial receiver in order to allow possible applications in many mobile data applications, such as DRM radio, to tune to stations in a digital AM broadcast system as suggested by Lee (col 2, lines 12-15).

Regarding claim 30, Bach et al, Furukawa et al, and Roshmann et al disclose the method according to claim 29, wherein they don't specifically disclose the method is used for Digital Radio Mondial reception. Lee discloses the method is used for Digital Radio Mondial reception (col 2, lines 12-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the modified digital shortwave receiver of Bach et al, Robinson, and Roshmann et al be a Mondial receiver in order to allow possible applications in many mobile data applications, such as DRM radio, to tune to stations in a digital AM broadcast system as suggested by Lee (col 2, lines 12-15).

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bach et al (US 4,856,085) in view of Furukawa et al (US 6,363,126) and further in view of Dwyer (US 5,970,400).

Regarding claim 24, Bach et al and Furukawa et al disclose the AM receiver according to claim 16, wherein Bach et al and Furukawa et al do not specifically disclose the receiver is characterized in that the at least one IF filter is an analogue filter. Dwyer discloses an analogue filter (col 8, lines 65-67). It would have been obvious to one of ordinary skill in the art at the time of the invention was made for the modified AM receiver of Bach et al and Robinson to use an analogue filter in Bach et al in order to filter out the undesired frequencies in an analog manner the received signal.

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bach et al (US 4,856,085) in view of Furukawa et al (US 6,363,126) and further in view of Nash (US 6,317,589).

Regarding claim 25, Bach et al and Furukawa et al disclose the AM receiver according to claim 16, wherein Bach et al and Furukawa et al don't specifically disclose the receiver is characterized in that the fixed IF bandwidth is 20 kHz. Nash discloses the receiver is characterized in that the fixed IF bandwidth is 20 kHz (col 3, lines 4-20). It would have been obvious to one of ordinary skill in the art at the time of the invention was made for the modified AM receiver of Bach et al and Furukawa et al to have a specific predefined IF bandwidth in order allocate a specific desired frequency that the bandwidth has to be in.

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bach et al (US 4,856,085) in view of Furukawa et al (US 6,363,126) and further in view of Dwyer (US 5,970,400).

Regarding claim 24, Bach et al and Furukawa et al disclose the AM receiver according to claim 16, wherein Bach et al and Furukawa et al do not specifically disclose the receiver is characterized in that the at least one IF filter is an analogue filter. Dwyer discloses an analogue filter (col 8, lines 65-67). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use an analogue filter in the modified AM receiver of Bach et al and Furukawa et al in order to filter in an analog manner the received signal.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bach et al (US 4,856,085) in view of Furukawa et al (US 6,363,126) and further in view of Nash (US 6,317,589).

Regarding claim 25, Bach et al and Furukawa et al disclose the AM receiver according to claim 16, wherein Bach et al and Furukawa et al do not specifically disclose the receiver is characterized in that the fixed IF bandwidth is 20 kHz. Nash discloses the receiver is characterized in that the fixed IF bandwidth is 20 kHz (col 3, lines 4-20). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a specific predefined IF bandwidth in the modified AM receiver of Bach et al and Furukawa et al in order allocate a specific frequency that the bandwidth has to be in.

Response to Arguments

9. Applicant's arguments with respect to claims 16-37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana N. Le whose telephone number is (571) 272-7891. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

01-07-05

LANA LE
PRIMARY EXAMINER

Lana Le